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#### **ABSTRACT**

This paper presents a set of interdisciplinary lessons for teaching about the Arctic National Wildlife Refuge (Alaska). Lessons include a petroleum product treasure hunt, an examination of life without petroleum, the development of a wildlife poster, an exploration of the tundra ecosystem and the plants and animals that live there, identification activities, activities involving maps, a structured controversy model for decision making, a discussion of lobbying, a public hearing simulation, and a flow chart of federal and state government. (LBG)



# THE ARCTIC NATIONAL WILDLIFE REFUGE

AN INTERDISCIPLINARY UNIT DEVELOPED BY

GAYLE THIEMAN AND MIKE GEIL

FAIRBANKS NORTH STAR BOROUGH SCHOOL DISTRICT P.O. BOX 1250 FAIRBANKS, AK 99707-1250 OCTOBER, 1991

UNDER THE AUSPICES OF THE CLOSE UP FOUNDATION

ENERGY, THE ENVIRONMENT AND THE POLICY CHOICES AHEAD

PORTIONS OF THIS UNIT WERE PRESENTED BY GAYLE Y. THIEMAN AND JODY S. MARCELLO AT THE NOVEMBER, 1992 NATIONAL COUNCIL FOR SOCIAL STUDIES ANNUAL CONFERENCE IN DETROIT, MI IN A WORKSHOP ENTITLED: "THE MANY VOICES OF ANWR: AN INTERDISCIPLINARY UNIT ON ENVIRONMENTAL DECISION-MAKING FOR THE ARCTIC NATIONAL WILDLIFE REFUGE"

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#### PETROLEUM PRODUCT TREASURE HUNT

#### **OBJECTIVE:**

- 1. Students will identify the variety of products made from petroleum.
- 2. Students will speculate how life would change without petroleum as an energy source.

SKILLS: comparing, hypothesizing, predicting, brainstorming

TIME REQUIRED: One (45 min.) class period in SCIENCE OR SOCIAL STUDIES

MATERIALS: Variety of items made from petroleum (cosmetics, plastic milk jug, styrofoam cup, synthetic fiber clothing, tennis show, computer floppy disk, science lab equipment, videotape or Nintendo game, eyeglasses, wristwatch, nylons).

Copy of handout "Products Made From Oil", On Top of ANWR, September 1989, ARCOAlaska, INC

Copy of Handout, "The Petroleum Tree," Alaska Minerals Kit. Alaska Department of Education, P.O. Box F, Juneau, AK 99811

#### PROCEDURE:

- 1. Ask students what all these items have in common. If necessary give them a clue such as kerosene or propane.
- 2. Divide students into cooperative learning groups. Create a scenario of "no more oil in Alaska" because of some political or environmental catastrophe. Students have 20 minutes in which to list every item they would no longer have available. At the end of 20 minutes each group reads its list and crosses off items that are duplicates of other groups' lists. The group with the most items left on the list (that other groups did not have) wins.
- 3. Assign students to add to their list based on discussion with family members or friends. Groups repeat the reporting process. (A competition can be developed between classes on the same middle school team or between the science and social studies classes in a school.)
- 4. Read and discuss with students the two handouts.

**EVALUATION** Posters can be created including all the items listed by the groups and posted around the school as an awareness builder concerning our dependence on petroleum.



## LIFE WITHOUT PETROLEUM

(SOURCE: Adapted from Chem Com: Chemistry in the Community (Dubuque, IA: Kendall/Hunt, 1988). c 1988 by American Chemical Society. Reprinted by permission of the American Chemical Society.)

#### **OBJECTIVES:**

- 1. Understand that wood \* and oil are both nonrenewable energy sources.
- 2. Explain why the demand for oil in increasing.
- 3. Analyze a graph to determine current and past energy sources.
- 4. Predict how life would change without petroleum as an energy source.
- 5. Appreciate the need to conserve energy.
- \*In the short term wood is a non-renewable resource. In Alaska it takes \_\_\_\_ years to grow har estable timber.

SKILLS: interpreting graphs, predicting, writing, discussing

TIME REQUIRED: One (45 min.) Class Period in SOCIAL STUDIES OR SCIENCE

MATERIALS: Copies of Handouts for all students.

#### PROCEDURES:

- 1. Introduce the activity by presenting a copy of the graph, "U.S. Energy Consumption By Fuel Type, 1850-1980" Ask students to study the graph.
- 2. Discuss the graph and accompanying questions.
- 3. Distribute copies of the excerpt from Isaac Asimov.
- 4. After students have read the excerpt ask students to write short descriptions of how their daily lives would change in a world without petroleum. Tell students to include in their descriptions the changes that would be the most difficult to adapt to and those that would be easiet, giving reasons for their selections.
- 5. Students present brief oral summaries of their written descriptions.
- 6. Hold a class discussion based on the following questions:
  What actions could be taken to keep this hypothetical situation from happening? What role would government, businesses, consumers play? Based on the graph, does it seem possible that other energy sources will replace oil as the source we depend on the most?

EVALUATION: Written papers and student participation in discussion.



#### WILDLIFE POSTER

**OBJECTIVE:** Students will research and prepare a poster on a wildlife species found in ANWR.

#### SKILLS:

Utilizing resources, reporting, learning from many sources;

TIME REQUIRED: Three (45 min.) class periods in SCIENCE, LANGUAGE ARTS, OR ART

#### MATERIALS:

Access to reference materials on arctic wildlife such as <u>Fish and Wildlife Resources of the Arctic Coastal Plain</u>, U.S. Fish and Wildlife Service.

Poster board, construction paper, butcher paper, and/or plain white copy paper for posters.

#### PROCEDURE:

SUMMARY: Students will be assigned or will choose an animal species found in ANWR, research specific information about their animal and prepare a poster displaying their animal and information. These may be displayed in the room and/or presented orally.

- 1. PREPARATION: Display a list of animals found in ANWR and assign or have students choose an animal to research and prepare a poster.
- 2. INFORMATION TO BE INCLUDED ON POSTER: What does it look like?; Common name and scientific name.; Where does it live?; What does it eat?; How is it adapted to living in the arctic?; When does it produce young and how many does it usually have?; How long does it live?; How does it die?; Does it live in other places?; What value is it to people?; Where does it fit into the food web?; Picture or drawing of animal; List of references.
- 3. SAMPLE POSTERS

EVALUATION: Completeness and accuracy of information examples and attractiveness of poster



ANIMALS OF THE ARCTIC NATIONAL
WILDLIFE REFUGE
FEATURING
URSUS MARITIMUS as the
POLAR BEAR



#### **TUNDRA TALES**

#### **OBJECTIVES:**

Students will be able to describe some of the plants, animals, and physical features of the arctic tundra ecosystem and how they interact. Students will also be able to describe how these characterics change through the seasons.

#### SKILLS:

Learning from many sources, utilizing resources, reporting, writing, editing, critiquing, developing visual presentations

TIME REQUIRED: Three (45 min.) class periods in SCIENCE or LANGUAGE ARTS

#### MATERIALS:

Acces to	referen	ice mat	terals or	n the a	arctic	tundra.		
Classroom	set of	"The S	Story of	Dicros	tanyx	torquatus	The	Collared
Lemming."	'							

#### PROCEDURE:

SUMMARY: Have students read the story of the collard lemining aloud in class. After finishing the story students are to write a story about a year in the life of an animal that lives in the tundra.

- 1. PREPARATION: Photocopy enough copies of the story for a classroom set. Arrange to have reference materials on the tundra available for students.
- 2. STUDENTS READ THE COLLARD LEMMING STORY ALOUD: Have students take turns reading from the story. Be sure to inform them what they will have to do after finishing the story and to pay particular attention to the descriptions of tundra life.
- 3. STUDENTS WILL WRITE A STORY: The students will write a story about a year in the life of an animal that lives in the tundra. The story should be fun to read and it should include information about the climate, plants, animals, and physical features of the tundra. The story should be a combination of fact and fiction.
- 4. WRITING A ROUGH DRAFT: Students will prepare a rough draft which will be critiqued (helpful review) by a panel of 2-3 students.
- 5. FINAL DRAFT: Students will prepare a final draft based on the panel's critique.



#### **EVALUATION:**

Grading of final draft will be based on the following criteria: Originalty of story; Quality of writing; Knowledge about animal; Knowledge about the tundra ecosystem (climate, plants, other animals, physical features); Bibliography (must use at least three different references).



## ALASKA'S SIX REGIONS

#### **OBJECTIVES:**

- 1. Identify political and geographic features of Alaska with special focus on the Arctic National Wildlife Refuge
- 2. Identify the six regions of Alaska with special focus on the regions which the Alyeska pipeline crosses between Prudhoe Bay and Valdez.
- 3. Compare the flora, fauna, geographic features, political entities, mineral resources, and peoples of each region.

SKILLS: locating, comparing, contrasting, interpreting maps & reference materials, creating visuals, writing, presenting information

TIME REQUIRED: 6 (45 min.) Class Periods in SOCIAL STUDIES

#### MATERIALS:

- 1. Desk map for each student showing Alaska and part of Canada
- 2. Wall maps of Alaska showing different projections; physical/geological features; vegetation patterns; resources; political units.
- 3. Variety of atlases.
- 4. Resource materials on each of six regions of Alaska (Northwest Coast/Arctic; Southwest; Interior; Southeast; Southcentral; Aleutian Is.) such as National Geographic books, Alaska Magazine, and tourist brochures.
- 5. Computer Program, Alaska Geography.
- 6. FNSBSD film: Magnificence in Trust (10678)

#### **PROCEDURES:**

- 1. As an introduction students may complete the Alaska Geography Computer Program which outlines the six regions and major geographic features of each area.
- 2. Give each student a blank desk map and a list of physical features (mountains, islands, rivers, oceans, bays, etc.) and political entities (cities and towns) of Alaska to locate on the map.
- 3 Students use wall maps and atlases to locate each item on their desk map.
- 4. Divide students into cooperative learning groups. Each group chooses a different region of Alaska to research.



- 5. Using resource materials on their region, the group creates a list of the climate, flora, fauna, geographic features, political entities, mineral resources, and people for their region.
- 6. The information may be written on an overhead transparency.
- 7. Show the film <u>Magnificence in Trust</u> which highlights three of the regions of Alaska (interior, southcentral, southeast).
- 8. Each group presents its report to the class. The teacher compares the information presented in the group reports to the different types of biomes (tundra, boreal forest, etc.) taught in the science class. It is important to emphasize the connections between biomes (science) and regions (social studies).
- 9 Each group is also responsible for creating a list of questions for the unit test based on their presentation.

**EVALUATION:** Objective test including map identification questions, items from students' reports. Essay test in which students compare and contrast two of the six regions.



#### ALASKA STUDIES MAP WORKSHEET

On your desk map of Alaska locate and print neatly the following:

Gulf of Alaska Cook Inlet Lake !liamna Pacific Ocean Arctic Ocean Beaufort Sea Bering Strait Glacier Bay **Bristol Bay** Prince William Sound Copper River Prudhoe Bay

Aleutian Islands Kodiak Island St. Lawrence Island Pribilof Islands Alaska Peninsula Kenai Pensinsula Seward Peninsula Yukon River Tanana River Kobuk River

Mr. McKinley Alaska Range **Brooks Range** Aleutian Range Anchorage Fairbanks Juneau Nome Kotzebue Barrow Kenai Homer Ketchikan Valdez Sitka



#### WHERE IN THE WORLD IS ANWR?

#### **OBJECTIVES:**

- 1. Locate the Arctic National Wildlife Refuge on a map of Alaska.
- 2. Review the geographic features, plants & animals, political entities, mineral resources, and peoples of the Arctic coastal plain and ANWR.

SKILLS: locating, brainstorming, understanding cause and effect, comparing & contrasting, interpreting maps & reference materials

TIME REQUIRED: One (45 min.) class period in SOCIAL STUDIES

#### MATERIALS:

- 1. Wall maps showing location of ANWR.
- 2. "ANWR's Coastal Plain--The Facts", On Top of ANWR. Nov. Dec, 1990, ARCO, Ak, Inc.
- 3. "What is the Arctic Refuge?" Northern Alaska Environmental Center, July, 1986 (includes map)
- 4. "Arctic National Wildlife Refuge." Handout from workshop.
- 5. Fish & Wildlife Resources of the Arctic Coastal Plain, U.S. Fish & Wildlife Service

#### PROCEDURES:

- 1. Students locate the Arctic National Wildlife Refuge on their Alaska desk map, read the handout "What is the Arctic Refuge?" and study the detailed map of ANWR.
- 2. Briefly review the history of ANCSA, ANILCA, and section 1002, and the establishment of the Arctic National Wildlife Refuge.
- 3. Using the resource, brainstorm with students the variety of fish and wildlife in ANWR. (Caribou, muskoxen, brown bears, polar bears, wolves, wolverines, foxes, swans, geese, ducks, snowshoe hare, lemming, snowy owls, ravens, plover, arctic terns, phalarope, arctic char, grayling, flounder, whitefish, cod, ptarmigan, whale, seals, ground squirrels, shrews) Note: Students may have already completed their ANWR wildlife posters and tundra ecosystem activities in Science class.
- 4. Using the students' Alaska desk maps and notes from presentations on Alaska regions, review the geographic features, political entitites, mineral resources, and peoples who live in and around the Arctic National Wildlife Refuge.

**EVALUATION:** Students play a version of Jeopardy in which they choose topics and point values for questions on geographic features, villages, minerals, animals, plants, and people of ANWR.



## STRUCTURED CONTROVERSY MODEL FOR DECISION-MAKING

#### **OBJECTIVES:**

- 1. Identify the two opposing viewpoints about drilling for oil in the Arctic National Wildlife Refuge.
- 2. Participate in structured controversy model of decision-making

SKILLS: drawing inferences, distinguishing fact vs. opinion, identifying propaganda and bias, applying, analyzing, synthesizing, discussing, evaluating, problem-solving, decision-making, compromising

TIME REQUIRED: Three (45 min.) class periods in SOCIAL STUDIES, SCIENCE, OR LANGUAGE ARTS

#### **MATERIALS:**

- 1. Videotapes presenting oil industry's and environmental organizations' viewpoints on oil exploration and development in the Arctic National Wildlife Range. "ANWR: Decisions for Tomorrow", Alaska Oil and Gas Association, 121 W. Fireweed Lane, Suite 207, Anchorage, AK 99503, Attn: Ardie Merbs (1/2 in. VHS, 16 min. \$12.50). "Arctic Refuge--Treasure of the North", Northern Alaska Environmental Center, 218 Driveway, Fairbanks, AK 99701, Attn. Video (VHS or Beta, 35 min. \$15.00)
- 2. "ANWR Oil: Prudent Policy...or Quick Fix?", Roger Herrera and Celia Hunter, Alaska Magazine. Aug. 1991, pp. 24-25, 74.
- 3. "Oil Drilling in the Arctic Refuge: Two Views" Mike Matz & Johnathan H. Adler,\_\_\_\_\_
- 4. "Arctic Showdown", Margaret E. Kriz, National Journal, June 8, 1991, pp. 1341-1344.
- 5. "It's Time to Drill Alaska's Refuge." Peter Nulty, Fortune,
- 6. "Oil Development vs. Wilderness in the Arctic National Wildlife Refuge," James R. Udall, Sierra, Sept.-Oct., 1987, pp. 41-48.

#### : (OCEDURES:

- 1. Divide the class into two groups: those in favor of drilling for oil and those opposed. Within the two groups, further subdivide into cooperative learning teams of three to four students.
- 2. Watch the two videotapes representing oil company and environmental organizations' points of view about drilling for oil in ANWR.
- 3. Teams read selected materials and take notes in preparation for a presentation of their group's viewpoint.



- 4. Each group presents a ten minute report arguing for or against drilling for oil in ANWR.
- 5. Following each group presentation, both sides are encouraged to question each other to clarify the opposing points of view.
- 6. The groups switch positions. The group that opposed drilling now prepares a five minute report outlining support of drilling. The group that supported drilling now prepares a five minute report opposing drilling.
- 7. Each side presents its arguments.
- 8. The class writes a synthesis document which includes both points of view and identifies areas of consensus and areas of disagreement.

**EVALUATION:** Student participation in presentations and discussion and final written paper by the class.



### LOBBYING ABOUT ANWR

(Source: Adapted from a Close Up Foundation Workshop presented in Washington, D.C. on July 25, 1991 by a Close Up staff member.

#### **OBJECTIVES:**

- 1. Discuss the history of ANWR
- 2. Identify the players in the ANWR debate and their points of view
- 3. Define the term "lobbying " and understand the part lobbying plays in the political process.
- 4. Design a comprehensive lobbying campaign.

SKILLS: drawing inferences, distinguishing fact vs. opinion, detecting propaganda & bias, summarizing, writing, presenting, persuading, compromising

TIME REQUIRED: Three (45 min.) class periods in SOCIAL STUDIES or LANGUAGE ARTS

#### MATERIALS:

- 1. "ANWR Oil: Prudent Policy...or Quick Fix?", Roger Herrera and Celia Hunter, Alaska Magazine. Aug. 1991, pp. 24-25, 74.
- 2. "Oil Drilling in the Arctic Refuge: Two Views" Mike Matz & Johnathan H. Adler.
- 3. "Arctic Showdown", Margaret E. Kriz, National Journal, June 8, 1991, pp. 1341-1344.
- 4. "It's Time to Drill Alaska's Refuge." Peter Nulty, Fortune,
- 5. "Oil Development vs. Wilderness in the Arctic National Wildlife Refuge," James R. Udall, Sierra, Sept.-Oct., 1987, pp. 41-48.
- 6. "ANWR Drilling Divides Natives," <u>Fairbanks Daily News Miner, August 6, 1991, pp. 1 & 5</u>
- 7 "Oil Plan Worries Indians." <u>Fairbanks Daily News Miner</u>, August 7, 1991, pp. 1 & 8
- 8. "Brief Overview of ANWR and the Oil Drilling Debate," Close Up Foundation.
- 9. Remarks of Governor Walter J. Hickel before the National Press Club, Feb. 5, 1991.
- 10. <u>CRS Issue Brief Arctic Resources: Over a Barrel?</u>, M. Lynne Corn & Claudia Copeland, Environment and Natural Resources Policy Division, Pamela Baldwin, American Law Division, Congressional Research Service, The Library of Congress, March 18, 1991 *Teacher Resource*



#### PROCEDURES:

- 1. Students read handout on the history of ANWR.
- 2. Explain the role and activities of lobbyists in influencing decision making by the state legislature and Congress.
- 3. Divide students into 6 groups representing oil industry representatives, environmental organizations, Gwichin Indians, Inupiat Eskimoes, President Bush and U.S. Dept. of Energy, Alaska Governor Walter Hickel and Alaska Dept. of Commerce.
- 4. Each lobbying group researches its point of view on ANWR, using the materials provided plus others the group may locate.
- 5. Students design a lobbying strategy to convince Congress, either that ANWR should be opened for drilling or kept closed. Students decide who the lobby should target; what ideas they will highlight and which points they will ignore; what compromises they are willing to make; and what other groups may be their allies.
- 6. Each lobbying group presents its campaign.

#### **EVALUATION:**

Students evaluate each group's lobbying campaign assigning points for accuracy, clarity, and persuasive power. Discuss with students which campaign they think has the greatest likelihood of succeeding. Continue the discussion by asking any of the following:

What are the best ways of influencing the federal government and specificially Congress? Is lobbying a democratic way to make government responsive to the people? What are the most important factors for the Congressmen who must decide whether or not to open ANWR? How important is the opinion of the people of Alsaka compared to the residents of the lower 48? What about the opinions of the Gwichin and Inupiat peoples? Are Congressmen best suited to make this decision because they might take a national rather than a local view?



#### SIMULATION OF LOCAL PUBLIC HEARING ON ANWR

#### **OBJECTIVES:**

- 1. Review the location and history of ANWR.
- 2. Identify the players in the ANWR debate, their points of view, and their political and economic role.
- 3. Understand the role played by local (borough), state, and federal government agencies in determining whether or not oil exploration will take place in ANWR.
- 4. Participate in a simulation of a local public hearing on ANWR organized by the Department of the Interior (U.S. Fish and Wildlife Service) or the Department of Energy.

SKILLS: understanding cause & effect, interviewing, drawing inferences, applying, analyzing, role playing, writing, presenting,

TIME REQUIRED: Five (45 min.) class periods in SOCIAL STUDIES

#### Materials:

#### Teacher Resources

- 1. CRS Issue Brief Arctic Resources: Over a Barrel?, M. Lynne Corn & Claudia Copeland, Environment and Natural Resources Policy Division, Pamela Baldwin, American Law Division, Congressional Research Service, The Library of Congress, March 18, 1991
- 2. CRS Report for Congress The Arctic National Wildlife Refuge: Major Oil Development or Wilderness, John E. Blodgett, Asst. Chief, and John L. Moore, Chief, Environment and Natural Resources Policy Division, Congressional Research Service, The Library of Congress, Feb. 25, 1988
- 3. <u>Tracking Arctic Oil, The Environmental Price of Drilling the Arctic National Wildlife Refuge</u>, National Resources Defense Council
- 4. Planning for the Future of the Arctic National Wildlife Refuge--an alternatives handbook
- 5. Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment, U.S. Department of the Interior, April 21, 1987 Student Materials:
- 5. Outline of political process involved in local public hearing.
- 6. Copies of proposed legislation (such as Senate Bill 1220)
- 7. Flowchart of Federal and State Government
- 8. Reference materials on ANWR listed in previous lessons



#### PROCEDURES:

- 1. Explain the role of federal agencies such as the Department of the Interior (U.S. Fish and Wildlife Service) or the Department of Energy in researching, surveying public opinion, and formulating proposed policies about energy conservation and development and natural resource management. Use the flowchart that shows the relationship of the national and state government bodies in our federal system.
- 2. Outline the procedures at a local public hearing in which a federal agency such as the Department of Energy takes public testimony on whether or not ANWR should be opened for drilling. In actuality, the public hearings were held across the state in many communities, not just one.
- 3. Students chose roles for the public hearing.

Representatives of the Department of the Interior who listen to testimony including the person who will chair the public hearing. Representatives from the Gwichin community of Arctic Village Representatives from the Inupiat community of Kakatovik Representatives from ARCO Alaska Representatives from the Northern Alaska Environmental Center Representatives from the Chamber of Commerce Representatives from the Alaska Department of Commerce Representatives from the local newsmedia (radio, television, paper) Representatives from the Alaska Department of Fish & Game Representatives from the local Sportsmen's Association Representatives from the University of Alaska (scientists in petroleum engineering, geology, environmental studies)

- 4. Students research their role and write questions they will use in interviewing someone in the community who represents their point of view.
- 5. Students conduct interview by telephone or in person.
- 6. Each student writes a three minute statement for the public hearing.
- 7. At the public hearing the chair calls upon members of the public to read their statements. Representatives from the Department of the Interior may choose to ask questions. Representatives from the media take notes and prepare to report on the public hearing through a radio or TV news brief or an article for the local paper.

#### **EVALUATION:**

Students' written and oral presentations are graded for completeness, authenticity, and clarity. Additional credit is given for the written summary of the interview.



#### **EXTENSION:**

As a follow up students may write letters to appropriate agencies, sign petitions, testify in public hearings, or hold a teleconference with Senate or Congressional representatives from their district to share what they have learned. Junior high students can communicate with other classes or teams; high school government and environmental science classes can present information to each other; junior high or high school classes can make presentations to elementary classes in the district. Cross-age instruction is very effective in helping students integrate what they have learned.



#### FLOW CHART OF FEDERAL and STATE GOVERNMENT

#### FEDERAL GOVERNMENT

**EXECUTIVE BRANCH** LEGISLATIVE BRANCH JUDICIAL BRANCH

President Congress Supreme Court

Vice President

Cabinet House of Rep. Senate Judges

Dept. of State

Dept. of Defense

Dept. of Justice

Dept. of Treasury

Dept. of Agriculture

Dept. of Commerce

Dept. of Education

Dept. of Labor

Dept. of Energy

Dept. of Health & Human Services

Dept. of Housing & Urban Development

Dept. of Transportation

Dept. of Veterans Affairs

Dept. of Interior

**Bureau of Land Management** 

**Bureau of Reclamation** 

National Park Service

**Geological Survey** 

Office of Surface Mining Reclamation and Enforcement

U.S Fish & Wildlife

#### STATE GOVERNMENT

**EXECUTIVE BRANCH** LEGISLATIVE BRANCH JUDICIAL BRANCH

Governor Legislature Supreme Court

Lt. Governor

Cabinet House of Rep. Senate Judges

Dept. of Fish & Game



## POSSIBLE SPEAKER RESOURCES ON ARCTIC NATIONAL WILDLIFE REFUGE

Northern Alaska Environmental Center 218 Driveway St., Fairban's (907) 452-5021

Mapco Alaska Petroleum Inc 1100 H & H Ln North Pole (907) 488-2741

Arctic National Wildlife Refuge 101-12th Ave., Fairbanks (907) 456-0250 Tanana Chiefs Conference 122 First Ave., Fairbanks (907) 452-8251

Alaska Fish & Wildlife Research Center 101-12th Ave., Fairbanks (907) 456-0305

Celia Hunter 1819 Musk Ox Trail, Fbks (907) 479-2754

Cold Regions Research and Engineering Laboratory (CRREL) Building 4070, Ft. Wainwright Fairbanks, AK 99703 (907) 353-5149 Arco Alaska Inc. 701 Bidwell, 201 Fbks. (907) 452-1677

University of Alaska, Fairbanks Speakers Bureau Contact Ms. Joan Roderick, Coordinator CNS Proposals Office (907) 474-7859

Alaska Department of Fish & Game 1300 College Rd. (907) 452-1531

Alyeska Pipeline Service Co. Environmental Protection Department (907) 456-9361

